

REMARKS

Claims 1, 2, 4-18 and 20-26 were rejected.

Claims 1, 2, 4, 14-18 and 26 have been amended.

Claim 27-30 has been added.

Applicants acknowledge receipt of the Examiner's Office Action dated May 1, 2007. All pending claims at that time were rejected. In light of the following remarks, Applicants respectfully request the Examiner's reconsideration and reexamination of all claims.

Objection of Specification

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. Applicants respectfully submit that the objection to the specification has been overcome with the amendments set forth above. For example, claim 1 has been amended and no longer contains the terms "relate", "related" and "corresponding." Consequently, Applicants respectfully requests that the objection to the specification for failure to provide antecedent basis for the claimed subject matter be removed. However, Applicants reserve the right to contest this objection.

Rejection of Claims under 35 U.S.C. § 112

Claims 1-2, 4-14, 16-18, 20-24 and 26 stand rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 17, and 26 have been amended to remove claim limitations containing the terms "relate" or "corresponds." Consequently, claims 1, 17, and 26 no longer lack proper antecedent basis in the specification for use of the terms "relate" or "corresponds." Dependent

claims 2, 4-14, 16, 18 and 20-24 are likewise patentable. Applicants respectfully request that the rejection under 35 U.S.C. § 112, second paragraph for claims 1-2, 4-14, 16-18, 20-24 and 26 be removed. Applicants, however, reserve the right to contest this rejection.

Rejection of Claims under 35 U.S.C. § 102

Claims 1-2 and 15 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Fitzgerald et al., U.S. Patent No. 5,787,485 ("Fitzgerald"). Applicants respectfully traverse this rejection because the sections of Fitzgerald argued in the Office Action fail to teach all the limitations of Applicant's claims.

Applicants respectfully submit that the sections of Fitzgerald cited in the Office Action fail to teach all the claim limitations of Claim 1. First, the cited sections of Fitzgerald fail to teach first and second write transactions, comprising first and second tags. Independent claim 1 recites:

A method comprising:-
a computer system generating first and second write transactions;
wherein the first and second write transactions comprise first and second tags,
respectively;
the computer system transmitting the first and second write transactions,
including the first and second tags, respectively, to first and second
storage devices, respectively;
wherein the first write transaction comprises data D to be written;
wherein the second write transaction comprises data D to be written.

The Office Action asserts that column 1, lines 57-61 of Fitzgerald discloses claim 1's requirement of "first and second write transactions comprise first and second tags." Column 1, lines 57-61 of Fitzgerald recites:

In particular, the reference label may be associated with a write request that has been received and processed at the first storage device prior to reading data from the first storage device in response to the mirror read request.

While the foregoing can be interpreted to teach that a reference label may be associated with a write request that has been received and processed at the first storage device, the foregoing does not specify first and second tags. Even if a reference label is comparable to a first tag, the cited section of Fitzgerald only discusses one reference label. Nowhere in the cited section does Fitzgerald provide disclosure of a second tag, or a second reference label, and thus fails to teach the claim limitation of first and second writing transactions, comprising first and second tags.

Second, the cited sections of Fitzgerald fail to teach transmitting first and second write transactions, including the first and second tags. Independent claim 1 recites:

A method comprising:
a computer system generating first and second write transactions;
wherein the first and second write transactions comprise first and second tags,
respectively;
the computer system transmitting the first and second write transactions,
including the first and second tags, respectively, to first and second
storage devices, respectively;
wherein the first write transaction comprises data D to be written;
wherein the second write transaction comprises data D to be written.

The Office Action asserts that column 1, lines 57-61 of Fitzgerald discloses claim 1's requirement of "transmitting the first and second write transactions, including the first and second tags." Column 1, lines 57-61 of Fitzgerald recites:

In particular, the reference label may be associated with a write request that has been received and processed at the first storage device prior to reading data from the first storage device in response to the mirror read request.

Fitzgerald purportedly teaches that a write request has been received and processed at the first storage device. The foregoing does not teach transmitting first and second write transactions including first and second tags. Instead, the foregoing only discusses a first storage device that

receives and processes a write transaction. Thus, the foregoing section does not disclose transmitting first and second write transactions, including first and second tags.

Applicants respectfully request that the rejection for claim 1 as being anticipated by Fitzgerald be removed because the cited sections of Fitzgerald fails to disclose all the limitations of claim 1.

Applicants respectfully submit that arguments made above for claim 1 equally apply for independent claim 15. Independent claim 15 recites:

A method comprising:
generating first and second write transactions;
wherein the first and second write transactions comprise first and second tags,
respectively, wherein the first and second tags are identical to each other;
transmitting the first and second write transactions including the first and second
tags, respectively, to first and second storage devices, respectively;
wherein the first write transaction comprises data D;
wherein the second write transaction comprises data D.

Limitations found in claim 1 are present in claim 15. Particularly, claim 15 contains the claim limitations “first and second write transactions comprise first and second tags” and “transmitting the first and second write transactions including the first and second tags.” The Office Action cites the same section of Fitzgerald to demonstrate claim 15’s limitation of first and second write transactions comprising first and second tags. However, the Office Action cites different sections of Fitzgerald to demonstrate claim 15’s limitation of transmitting the first and second write transactions including the first and second tags. Particularly, the Office Action cites column 2, lines 25-29 and column 2, lines 45-49. Column 2, lines 25-29 recites:

In another aspect, generally, the invention features a mirrored data storage system. The system includes a first storage device, a second storage device, a first controller associated with the first storage device and a second controller associated with the second storage device.

Column 2, lines 45-49 recites:

The second controller may be configured to process write requests by writing data to the second storage device until a write request associated with the same reference label as that sent with the data by the first controller is encountered.

Fitzgerald purportedly teaches a mirrored data storage system with a first storage device, a second storage device, a first controller, and a second controller, where a second controller may be configured to process write requests by writing data to the second storage device. The cited sections of Fitzgerald do not disclose transmitting first and second write transactions, but instead merely teaches processing write requests. Thus, Fitzgerald fails to disclose transmitting first and second write transaction including the first and second tags.

Applicants respectfully request that the rejection for claim 15 as being anticipated by Fitzgerald be removed in view of the above discussion.

Rejection of Claims under 35 U.S.C. § 103

Claims 4-6, 13-14, 16-18, 20-21 and 24-26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fitzgerald et al., in view of Selkirk et al., U.S. Patent No. 6,804,755 ("Selkirk"). Claims 7-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fitzgerald, in view of Selkirk, and further in view of Gaither et al., U.S. Publication No. 2004/0098544 ("Gaither"). Claims 11-12 and 22-23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Fitzgerald in view of Selkirk and further in view of Mattis et al., U.S. Patent No. 6,128,627 ("Mattis"). Applicants respectfully traverse the rejections because all the claim limitations are not taught or suggested by the combination of Fitzgerald, Selkirk, Gaither, and Mattis as argued in the Office Action.

Applicants respectfully submit that all the claim limitations of claim 4 are not taught or suggested by the combination of Fitzgerald and Selkirk as argued in the Office Action. It is to be noted that the amended sections of claim 4 do not materially alter the scope of the claim limitation examined in the Office Action.

First, the cited sections of Selkirk fail to teach storing first write information in an entry of a first tag table, wherein the write information comprises the first tag and an identity of a logical block where data D is to be written, wherein the first tag table is stored in first memory.

Claim 4 recites:

The method of claim 1 further comprising:
the first storage device receiving the first write transaction;
the first storage device storing first write information in an entry of a first tag table, wherein the write information comprises the first tag and an identity of a logical block where data D is to be written, wherein the first tag table is stored in first memory;
the second storage device receiving the second write transaction;
the second storage device storing second write information in an entry of a second tag table, wherein the second write information comprises the second tag and an identity of a logical block where data D is to be written, wherein the second tag table is stored in second memory.

The Office Action asserts that column 9, line 58 and column 10, lines 30-34 of Selkirk discloses claim 4's requirement of "storing first write information in an entry of a first tag table, wherein the write information comprises the first tag and an identity of a logical block where data D is to be written, wherein the first tag table is stored in first memory." Column 9, line 58 of Selkirk recites:

multi-layer virtual mapping tree method

Column 10, lines 30-34 of Selkirk recites:

storage subsystem may be organized using multiple layers of mapping tables which may provide unique identification of the storage location of the data such that individual entries in the mapping tables are variable and may be made self-defining with respect to the amount of data managed.

The cited sections of Selkirk purportedly teach multiple layers of mapping tables that provide unique identification of the storage location of data. The foregoing sections do not teach storing first write information in an entry of a first tag table, wherein the write information comprises the first tag and an identity of a logical block where data D is to be written, wherein the first tag table is stored in first memory. Instead, the foregoing sections only discuss the organization of multiple layers of mapping tables to provide location of a storage location. Thus, the foregoing section does not disclose storing first write information in an entry of a first tag table, wherein the write information comprises the first tag and an identity of a logical block where data D is to be written, wherein the first tag table is stored in first memory.

Second, the cited sections of Selkirk fail to teach storing in an entry of a second tag table, the second tag and an identity of the logical block where data D is to be written, wherein the second tag table is stored in second memory, as recited in claim 4. The Office Action asserts that column 9, line 58 and column 10, lines 30-34 of Selkirk also disclose claim 4's requirement of "storing second write information in an entry of a second tag table, wherein the write information comprises the second tag and an identity of a logical block where data D is to be written, wherein the second tag table is stored in second memory." The cited sections of Selkirk purportedly teach multiple layers of mapping tables that provide unique identification of the storage location of data. The foregoing sections do not teach storing second write information in an entry of a second tag table, wherein the write information comprises the second tag and an identity of a logical block where data D is to be written, wherein the second tag table is stored in second memory. Instead, the foregoing sections only discuss the organization of multiple layers of mapping tables to provide location of a storage location. Thus, the foregoing sections do not disclose storing second write information in an entry of a second tag table, wherein the write

information comprises the second tag and an identity of a logical block where data D is to be written, wherein the second tag table is stored in second memory.

Applicants respectfully request that the rejection for claim 4 as being unpatentable over Fitzgerald in view of Selkirk be removed.

Applicants respectfully submit that all the claim limitations of claim 17 are not taught or suggested by the combination of Fitzgerald and Selkirk as argued in the Office Action. The Office Action has cited the same sections of Fitzgerald as per rejection of claim 1. The cited sections of Fitzgerald fail to teach first and second write transactions comprising first and second tags and fails to teach transmitting the first and second write transactions including the first and second storage tags. Independent claim 17 recites:

A computer readable medium storing instructions executable by a computer system, wherein the computer system implements a method in response to executing the instructions, the method comprising:
generating first and second write transactions;
wherein the first and second write transactions comprise first and second tags, respectively;
transmitting the first and second write transactions including the first and second tags, respectively, directly or indirectly to first and second storage devices, respectively;
wherein the first write transaction comprises data D to be written;
wherein the second write transaction comprises data D to be written.

Considering the argument made in response to the 35 U.S.C. § 102 rejection of claim 1, claim limitations of claim 17 are likewise not disclosed in Fitzgerald. Thus, all the claim limitations of claim 17 are not taught or suggested by the combination of Fitzgerald and Selkirk as argued in the Office Action. Applicants respectfully request that the rejection for claim 17 as being unpatentable over Fitzgerald in view of Selkirk be removed.

PATENT

Applicants respectfully submit that all the claim limitations of claim 25 are not taught or suggested by the combination of Fitzgerald and Selkirk as argued in the Office Action. The Office Action has rejected claim 25 using the same rationale as per rejection of claim 17.

Independent claim 25 recites:

A computer readable medium storing instructions executable by a computer system, wherein the computer system implements a method in response to executing the instructions, the method comprising:

generating first and second write transactions;

wherein the first and second write transactions comprise first and second tags, respectively;

the computer system transmitting the first and second write transactions including the first and second tags, respectively, to first and second storage devices, respectively;

wherein the first write transaction comprises data D;

wherein the second write transaction comprises data D.

Claim 25 is patentable in view of the rationale for claim 17 above. Applicant respectfully requests that the rejection for claim 25 as being unpatentable over Fitzgerald in view of Selkirk be removed.

Applicants respectfully submit that all the claim limitations of claim 26 are not taught or suggested by the combination of Fitzgerald and Selkirk as argued in the Office Action. The Office Action has rejected claim 26 using the same rationale as per rejection of claims 1 and 4.

Independent claim 26 recites:

A computer readable medium storing instructions executable by a computer system, wherein the computer system implements a method in response to executing the instructions, the method comprising:

- in response to receiving a first transaction comprising a first tag and data D, storing in an entry of a first tag table, the first tag and an identity of a logical block where the data D is to be written, wherein the first tag table is stored in first memory;
- a second storage device receiving the second write transaction comprising data D, wherein the second write transaction includes the second tag when the second storage device receives the second write transaction;
- the second storage device storing in an entry of a second tag table, the second tag and an identity of the logical block where data D is to be written, wherein the second tag table is stored in second memory.

Claim 26 is patentable in view of the rationale for claim 1 above. Applicant respectfully requests that the rejection for claim 25 as being unpatentable over Fitzgerald in view of Selkirk be removed.

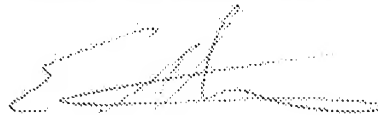
Remaining claims 4-6, 13-14, 16, 18, 20-21, and 24 depends directly or indirectly from claims 1 and 17. Insofar as independent claims 1 and 17 have been found to be patentable, it follows that dependent claims 4-6, 13-14, 16, 18, 20-21, and 24 are likewise patentable.

CONCLUSION

Applicants submit that all claims are now in condition for allowance, and an early notice to that effect is earnestly solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is requested to telephone the undersigned.

If any extensions of time under 37 C.F.R. § 1.136(a) are required in order for this submission to be considered timely, Applicant hereby petitions for such extensions. Applicant also hereby authorizes that any fees due for such extensions or any other fee associated with this submission, as specified in 37 C.F.R. § 1.16 or § 1.17, be charged to deposit account 502306.

Respectfully submitted,



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